

Appendix L. Task Category Rating Instructions

Section II - Category Weights

FIREFIGHTER TASK CATEGORY WEIGHTS: The tasks in the previous section were organized into seventeen (17) different Firefighter task categories. In this section you are asked to distribute 100 points among these seventeen task categories. Please allocate 100 points among the various task categories according to their relative importance for successful performance of the entry-level Firefighter job as a whole. By entry-level Firefighter, we mean someone who has completed Probationary Firefighter School and has been assigned to an engine or ladder company, but has not yet taken on any specialized work.

Before allocating points to any task category, please refer to the Firefighter Task Category reference sheet. You may find it helpful to identify the categories that are most important from your perspective and assign point values to them first, and then proceed to the categories that are of lesser importance from your perspective.

Now, please distribute 100 points among the task categories listed below according to their relative importance for successful performance in the entry-level Firefighter job as a whole. *Do not use fractions of points, e.g., 20.5. When you have completed your distribution of points, check that the column adds to 100.*

	Relative Importance
1. Station & Equipment Maintenance/Chores	_____
2. Initial Response to Incident/Driving	_____
3. Size-Up & Initial Actions	_____
4. Ladder Operation	_____
5. Climbing & Portable Ladder Activities	_____
6. Building Entry	_____
7. Search	_____
8. Victim Removal	_____
9. Ventilation	_____
10. Engine Company Operations	_____
11. Overhaul	_____
12. Clean Up/Pick Up	_____
13. Inspection of Building/Hydrants/Alarm Boxes	_____
14. Rescue/Extrication	_____
15. Providing Medical Assistance	_____
16. Training	_____
17. House Watch Duties	_____
TOTAL MUST EQUAL 100 —	_____

Does your total equal 100? If not, redistribute the points until they total 100.

Appendix M. Readability Analysis: Documents and Results

Table M-1. Documents Included in Analysis of Firefighter Reading Demands

Document Type	Description	Use	Relevant Task Categories
Probationary Firefighter Manual	Manual utilized during Probationary Firefighter School consisting of approximately 800 pages of text. Covers rules, procedures, techniques and other material taught during initial training.	Background material and nighttime reading assignments for trainees.	Training
Inspection Forms	Samples of inspection forms completed by firefighters on the job.	Used during the course of regular firefighter work, notably when documenting results of inspections. Note that FDNY has provided samples of the forms rather than the full catalogue of forms. However, we were able to view printed copies of other forms within the series during our station visits, and they all use a similar format.	Inspection of Buildings/Hydrants/Alarm Boxes
Building Inspection Safety Program (BISP) Manual	Detailed manual that covers inspection procedures and processes consisting of approximately 1200 pages.	Firefighters use this document as a reference source when conducting inspections and documenting violations. A copy of the manual is typically maintained on the apparatus so that firefighters can reference it as necessary during inspections.	Inspection of Buildings/Hydrants/Alarm Boxes
Engine Company Reading List	List of 29 reading assignments to be completed during a new firefighter's first three years assigned to an engine company. Lessons cover a variety of firefighting techniques and procedures, and draw from the library of FDNY firefighter reference books. Total number of pages to be determined.	Study material during first three years assigned to engine company. Firefighter and commanding officer must sign off that assignments have been completed.	Training
Ladder Company Reading List	List of 26 reading assignments to be completed during a new firefighter's first three years assigned to an engine company. Lessons cover a variety of firefighting techniques and procedures, and draw from the library of FDNY firefighter reference books. Total number of pages to be determined.	Study material during first three years assigned to engine company. Firefighter and commanding officer must sign off that assignments have been completed.	Training

Table M-2. Readability Analysis Results

Document Type	Total No. Pages	Flesch-Kincaid Index	SMOG Index
Probationary Firefighter Manual	950	8.3	11.7
Inspection Forms	26	15.9	11.9
Building Inspection Safety Program (BISP) Manual	1215	9.2	12.8
Certified First Responders - Defibrillation (CFR-D) Manual	232	10.6	13.4
Engine Company Reading List	817	8.9	12.3
Ladder Company Reading List	1042	8.7	12.1

Appendix N. FDNY Learning Process Interview Forms

Figure N-1. Incumbent Interview Form

FDNY Learning Process Interviews Incumbent Firefighter Form

Purpose: Hello, my name is [_____]. I'm a consultant working with DCAS to document the job requirements of entry-level firefighters at FDNY. As part of this project we need to understand how new firefighters learn during the academy and on the job. I have some questions about your experience during Probationary Firefighter School, and also about on-the-job training and learning. After some basic background questions, I will be asking you about the specific learning resources that you used during training in the academy and on the job. We will be covering a lot of detailed information, so please make sure to ask me questions if anything is unclear. This interview is scheduled to take no more than one hour.

Questions:

1. **Background Information.** First, I'd like to ask you a few questions about your background and experience.
 - a. How long have you been with FDNY?
 - b. What is your current rank and assignment?
 - c. How long have you been in your current assignment?
 - d. When did you go through probationary training (i.e., how long ago)?
 - e. What is your educational background? Level attained?
 - f. institutions attended; note any undertaken after joining FDNY
 - g. Education or training in progress
 - h. What types of jobs have you held prior to joining FDNY?
2. **Learning Process & Sources:** Next I would like to ask you to think back to your experience during FDNY Probationary Firefighter School. I am going to review various training topic areas, and as I do, I'd like you to describe how you went about learning each one and what sources of information we were most helpful to you in learning.

[**Note to interviewer,** if necessary you can use the following list as examples of information sources if further clarification is needed - demonstrations, videos, drills, reading materials, or discussions]

a. Rules and regulations	
b. Tools	
c. Chemistry of Fire	
d. Bunker Gear	
e. Knots & Ropes	
f. Forcible Entry	
g. Safety Procedures	
h. Building Construction	
i. Portable Ladders	

j. Search	
k. Engine Company Operations & Tactics	
l. Ladder Company Operations & Tactics	
m. Are there other topics you would like to add?	

3. **Source of Information:** Now, let's talk about some specific sources of information. How did you go about using the following sources of information during Probie School?
- Lectures
 - Demonstrations
 - Reading Materials
 - Videos
 - Drills
 - Discussion
 - Any other sources?
4. During Probie School, which of these sources of information were most helpful for learning the Firefighter job?
5. Did any of these sources present unique, important information that was not available or hard to obtain through any other source?

[Note to interviewer – if necessary, you can clarify this question by asking “was there was anything unique that you could only learn using one of these sources. If so, can you describe?”]

Specific Resources: Now, let's discuss some specific learning resources and how you have used them during initial firefighter training, at your station, and at the scene of fires or emergencies.

- At the academy:** Let's begin with some reference documents that are provided during new Firefighter training.

	a) During new firefighter training, how much time per week did you spend reading this document on-site at the academy? How much time per week did you spend reading this document away from the academy?	b) Was there important information that was ONLY in the manual and not obtainable through lecture, demonstration, drill, discussion or by other source?	c) If so, can you describe what type of important information was presented only in the manual and not addressed in any other learning source?	d) Could you have successfully completed probationary firefighter school without reading, studying, and referring to the manual?
6. Probationary	Hrs/Minutes at	Y/N		Y/N

<p><i>Firefighter Manual, or Probie Manual - This two-volume manual covers a variety of topics such as general deportment, chemistry of fire, fire department apparatus, safety and many others.</i></p>	<p>the academy: _____</p> <p>Hrs/Minutes away from the academy: _____</p>			
<p>7. <i>Certified First Responder with Defibrillation Manual, or CFR-D Manual – This manual covers a variety of topics such as Dispatch and Response guidelines, Infectious Diseases, Legal Guidelines, On Scene Operations Protocols, and many others.</i></p>	<p>Hrs/Minutes at the academy: _____</p> <p>Hrs/Minutes away from the academy: _____</p>	Y/N		Y/N
<p>8. <i>Were there any other important manuals or documents you used at the academy?</i> [Interviewer, note specific documents below]</p>	<p>Hrs/Minutes at the academy: _____</p> <p>Hrs/Minutes away from the academy: _____</p>	Y/N		Y/N

- **At the Station** – Now let's discuss some learning resources that are available to Firefighters at the station. First, we will focus on the time when you were still on probation, after completing Probie school:

	<p>a) How much time did you spend reading this resource each week during probation?</p>	<p>b) Was there important information that was ONLY in the readings and not obtainable during drill, demonstration, discussion or other source?</p>	<p>c) If so, can you describe what type of important information was available only in the readings and not addressed in any other learning</p>	<p>d) Could you have successfully completely probation without reading, studying, and referring to the reading list, if all other learning</p>
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			source?	resources were available?
<p>9. <i>Engine/Ladder company reading list (Interviewer Note—please reference the list that is relevant to the person being interviewed, depending on whether they were assigned to an engine or ladder company after initial training) These lists are provided to probationary firefighters once they are assigned to an engine or ladder company. The engine company list covers topics such as size up, in line pumping relay, hydrants, hose fittings, and many other subjects. The ladder company list covers topics such as size up, forcible entry, portable ladders, ventilation, and many other subjects.</i></p>	<p>Hrs/Minutes: _____</p>	Y/N		Y/N
<p>10. <i>Were there any other important manuals or documents you used at the station during probation? (Interviewer, note specific documents below)</i></p>	<p>Hrs/Minutes: _____</p>			

11. *Was there any verification of whether or not you read the engine or ladder company reading list material? If so, how?*

Now, let's discuss how you use written materials on the job, now that you are past probation.

12. *How much time do you spend per week reading documents such as manuals, bulletins, etc. related to the job?*

Hrs/Minutes: _____

13. Is there any important information that you learn primarily by reading? In other words, is there important information that would be extremely difficult to learn based only on other sources like drill, demonstration, discussion, etc.? Y/N
14. If so, can you describe?
15. Is there any important information that you learn only by reading? In other words, information that would be impossible to learn based only on other sources like drill, demonstration, discussion, etc.? Y/N
16. If so, can you describe?
- **At the scene:** Finally, let's discuss resource materials and documents available to you at the scene.
17. Do you refer to any documents or manuals at the scene of fires or other emergencies to look up information as part of performing the firefighter job? Y/N
18. If so, can you describe these materials and how you use them? How often do you use them?
19. Is any other reading required at the scene of fires or other emergencies? Some examples might be hazardous warning signs, building information signs, blueprints, etc.? Y/N
20. If so, can you describe the items you might encounter at the scene of a fire or other emergency that would require reading?
21. Before we close, I have one final question on a completely different topic. Our job analysis showed that Firefighters need basic arithmetic skills to perform certain parts of the job. My question is whether you have to rely on your math skills without the use of a calculator? Y/N
- a. If so, could you give me an example?

Thank you for your time today. I appreciate the valuable information you provided.

Figure N-2. Trainer Interview Form

FDNY Learning Process Interview
Trainers Form

Purpose: Hello, I am [_____]. I'm consultant working with DCAS to document the job requirements of entry-level firefighters at FDNY. As part of this project, we need to understand how new firefighters learn during the academy and on the job.

I have some basic questions about your experience training students during Probationary Firefighter School, and also about on-the-job training and learning. After some basic background questions, I will be asking you about the specific learning resources that firefighters might use during Probie School and on the job. We will be covering a lot of detailed information, so please make sure to ask me questions if anything is unclear. This interview is scheduled to take no more than one hour.

Questions:

22. **Background Information** – First, I'd like to ask you a few questions about your background and experience.

- i. How long have you been with FDNY?
- j. What is your current rank and assignment?
- k. How long have you been in your current assignment?
- l. When did you go through probationary training (i.e., how long ago)?
- m. When did you last serve as a Probie instructor?
- n. Were the specific areas or subjects that you trained in Probie School?
- o. What is your educational background; level attained?
- p. Institutions attended; any undertaken after joining FDNY?
- q. Education or training in progress?
- r. What types of jobs have you held prior to joining FDNY?

23. **Learning Process & Sources:** *Next, I would like to ask you to think back to your experience as an instructor at FDNY Probationary Firefighter School. I am going to review various training topic areas, and as I do, I'd like you to describe how students go about learning each one and what sources of information are most helpful to students for learning.*

[Note to interviewer, if necessary you can use the following list as examples of information sources if further clarification is needed - demonstrations, videos, drills, reading materials, or discussions.]

a. Rules and regulations	
b. Tools	
n. Chemistry of Fire	
o. Bunker Gear	
p. Knots & Ropes	
q. Forcible Entry	
r. Safety Procedures	
s. Building Construction	
t. Portable Ladders	
u. Search	
v. Engine Company Operations & Tactics	
w. Ladder Company Operations & Tactics	
x. Are there other topics you would like to add?	

24. **Sources of Information:** Now, let's talk about some specific sources of information. How did students go about using the following sources of information during Probie School?

- h. Lectures
- i. Demonstrations
- j. Reading Materials
- k. Videos
- l. Drills
- m. Discussion
- n. Any other sources?

25. During Probie School, which of these sources of information were most helpful to students for learning the Firefighter job?

26. Did any of these sources present unique, important information that was not available or hard to obtain through any other source?

[Note to interviewer – if necessary, you can clarify this question by asking “was there was anything unique that students could only learn using one of these sources.” If so, can you describe?

Specific Resources: Now, let's discuss some specific learning resources and how they are used during initial firefighter training, at the station, and at the scene of fires or emergencies.

- **At the academy:** Let's begin with some reference documents that are provided during new Firefighter training.

	<p>a) During new firefighter training, how much time per week do students spend reading this document on-site at the academy?</p> <p>How much time per week do students spend</p>	<p>b) Was there important information that is ONLY in the manual and not obtainable through lecture, demonstration, drill, discussion or by other source?</p>	<p>c) If so, can you describe what type of important information is presented only in the manual and not addressed in any other learning source?</p>	<p>d) Could a student successfully complete probationary firefighter school without reading, studying, and referring to the manual?</p>
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	<i>reading this document away from the academy?</i>			
27. Probationary Firefighter Manual, or Probie Manual - This two-volume manual covers a variety of topics such as general deportment, chemistry of fire, fire department apparatus, safety and many others.	Hrs/Minutes at the academy, on average: _____ Hrs/Minutes at the academy, minimum: _____ Hrs/Minutes at the academy, maximum: _____ Hrs/Minutes away from the academy, on average: _____ Hrs/Minutes away from the academy, minimum: _____ Hrs/Minutes away from the academy, maximum: _____	Y/N		Y/N
28. Certified First Responder with Defibrillation Manual, or CFR-D manual – This manual covers a variety of topics such as Dispatch and Response guidelines, Infectious Diseases, Legal Guidelines, On Scene Operations Protocols, and many others.	Hrs/Minutes at the academy, on average: _____ Hrs/Minutes at the academy, minimum: _____ Hrs/Minutes at the academy, maximum: _____ Hrs/Minutes away from the academy, on average: _____ Hrs/Minutes	Y/N		Y/N

	away from the academy, minimum: _____ Hrs/Minutes away from the academy, maximum: _____			
29. Are there any other important manuals or documents that students use during initial training at the academy? [Interviewers, note specific documents below]	Hrs/Minutes at the academy, on average: _____ Hrs/Minutes at the academy, minimum: _____ Hrs/Minutes at the academy, maximum: _____ Hrs/Minutes away from the academy, on average: _____ Hrs/Minutes away from the academy, minimum: _____ Hrs/Minutes away from the academy, maximum: _____	Y/N		Y/N

- **At the Station** – Do you supervise or help train new firefighters at the station? {Interviewer, skip to Question # 12 preamble if answer is “no”}

If so, let's discuss some learning resources that are available to Firefighters at the station. First we will focus on the period of time when new firefighters are still on probation, after completing Probie School.

	a) How much time does a new firefighter spend reading	b) Is there important information that is ONLY in the	c) If so, can you describe what type of important	d) Could a new firefighter successfully completely
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	<i>this resource each week during probation?</i>	<i>readings and not obtainable during drill, demonstration, discussion or other source?</i>	<i>information is available only in the readings and not addressed in any other learning source?</i>	<i>probation without reading, studying, and referring to the reading list, if all other learning resources were available?</i>
<p>30. Engine/Ladder company reading list - These lists are provided to probationary firefighters once they are assigned to an engine or ladder company.</p> <p>The engine company list covers topics such as size up, in line pumping relay, hydrants, hose fittings, and many other subjects.</p> <p>The ladder company list covers topics such as size up, forcible entry, portable ladders, and ventilation.</p>	<p>Hrs/Minutes at the academy, on average: _____</p> <p>Hrs/Minutes at the academy, minimum: _____</p> <p>Hrs/Minutes at the academy, maximum: _____</p> <p>Hrs/Minutes away from the academy, on average: _____</p> <p>Hrs/Minutes away from the academy, minimum: _____</p> <p>Hrs/Minutes away from the academy, maximum: _____</p>	Y/N		Y/N
<p>31. Are there any other important manuals or documents that new firefighters use at the station during probation? [Interviewer, note specific documents below]</p>	<p>Hrs/Minutes at the academy, on average: _____</p> <p>Hrs/Minutes at the academy, minimum: _____</p> <p>Hrs/Minutes at the academy, maximum: _____</p> <p>Hrs/Minutes away from the</p>			

	academy, on average: _____ Hrs/Minutes away from the academy, minimum: _____ Hrs/Minutes away from the academy, maximum: _____			
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32. Is there any verification of whether or not new firefighters read the engine or ladder company reading list materials? If so, how?

Let's discuss how Firefighters use written materials on the job once they are past probation.

33. How much time do firefighters spend per week reading documents such as manuals, bulletins, etc. related to the job?

Hrs/Minutes on average: _____ Minimum: _____ Maximum: _____

34. Is there any important information that firefighters learn primarily by reading? In other words, is there important information that would be extremely difficult to learn based only on other sources like drill, demonstration, discussion, etc.? Y/N

35. If so, can you describe?

36. Is there any important information that firefighters learn only by reading? In other words, information that would be impossible to learn based only on other sources like drill, demonstration, discussion, etc.? Y/N

37. If so, can you describe?

- **At the scene:** *Now, let's discuss resource materials and documents available to firefighters at the scene of fires or other emergencies.*

38. Do firefighters refer to any documents or manuals at the scene of fires or other emergencies to look up information as part of performing the firefighter job? Y/N

39. If so, can you describe these materials and how firefighters use them? How often do they use them?
40. Is any other reading required of firefighters at the scene of fires or other emergencies? Some examples might be hazardous warning signs, building information signs, blueprints, etc.? Y/N
41. If so, can you describe the items that firefighters might encounter at the scene of a fire or other emergency that would require reading?
42. Before we close, I have one final question on a completely different topic. Our job analysis showed that firefighters need basic arithmetic skills to perform certain parts of the job. My question is whether firefighters have to rely on their math skills without the use of a calculator? Y/N
43. If so, could you give me an example?

Thank you for your time today. I appreciate the valuable information you provided.

Appendix O. Job Performance Rating Booklet



FIREFIGHTER RESEARCH-ONLY PERFORMANCE RATING BOOKLET

The information you provide in this booklet will be used in a research study to evaluate new tests that will be used to hire future Firefighters. Your responses will have a direct impact on the quality and effectiveness of the new tests, and ultimately, the quality of future recruits.

Before we begin, it is important to note that the information you provide in this booklet:

- ***Will be collected directly by PSI, an independent research company;***
- ***Will be used only by PSI and only for the purposes of this study;***
- ***Will be kept strictly confidential and will not be shared with the person being described, the department, or DCAS;***
- ***Will have no effect on the employment of the person being described.***

This booklet contains several sections. In Section 1 there are a few background questions about you and the Firefighters you will rate today. The names of the Firefighters you are to rate appear on the separate **Rating Assignment Form**. Please look at that list of names. If you are unable to accurately describe the work performance of any of the Firefighters on the list, please inform the session administrator.

Please answer the questions in Section 1. Record the names of the Firefighters that appear on your **Rating Assignment Form** in the spaces on page 1 labeled Firefighter 1, Firefighter 2, Firefighter 3, and so on. If you have more than 5 Firefighters to rate, you will need another **Performance Rating Booklet**.

In the remaining sections of this booklet, you are to rate the performance of your assigned Firefighters in 18 different work areas, as well as overall performance. You have also been provided a supplemental document containing **Example Job Tasks and Work Behaviors**. We will review and discuss these before you start your ratings.

As you rate each Firefighter, think about his or her performance during the **most recent 12 months on the job**. If you have supervised the person for less than 12 months, describe the person's performance during the time you observed his or her work. If you are unable to accurately describe the work performance of any of the Firefighters on the list, please inform the session administrator.

Remember, people differ from each other and each person has unique strengths and weaknesses. Please rate each Firefighter's performance in each work area taking into account his or her strengths and weaknesses. Please take your time, follow all instructions, and provide accurate information.

Thank you for your help.

Section 1: BACKGROUND INFORMATION

All identifying information will be kept strictly confidential by PSI and used for research purposes only. This information is to document that participants are representative of the FDNY.

YOUR NAME (last, first): _____						
Information about You:		Information about the Firefighters You Supervise:				
1. Today's Date: ____/____/____ (Month/Day/Year)	Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	Firefighter 1 _____ (Name) _____ (Code Number)	Firefighter 2 _____ (Name) _____ (Code Number)	Firefighter 3 _____ (Name) _____ (Code Number)	Firefighter 4 _____ (Name) _____ (Code Number)	Firefighter 5 _____ (Name) _____ (Code Number)
2. How long have you supervised Firefighters at FDNY? ____ Years ____ Months (Approx.)	6. Are you currently a supervisor of this Firefighter? In other words, do you frequently work with this person during a typical tour of duty?	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No	____ Yes ____ No
3. How long have you worked at FDNY? ____ Years ____ Months (Approx.)	7. How long have you been assigned to the same company? (Approx.)	____ Years & ____ Months	____ Years & ____ Months	____ Years & ____ Months	____ Years & ____ Months	____ Years & ____ Months
4. What is your current assignment? ____ Engine ____ Ladder ____ Other: _____ (please specify)	8. Please circle the number that best describes your level of knowledge of the Firefighter's job performance.	1 = Slightly knowledgeable 2 = Fairly knowledgeable 3 = Very knowledgeable 4 = Extremely knowledgeable	1 = Slightly knowledgeable 2 = Fairly knowledgeable 3 = Very knowledgeable 4 = Extremely knowledgeable	1 = Slightly knowledgeable 2 = Fairly knowledgeable 3 = Very knowledgeable 4 = Extremely knowledgeable	1 = Slightly knowledgeable 2 = Fairly knowledgeable 3 = Very knowledgeable 4 = Extremely knowledgeable	1 = Slightly knowledgeable 2 = Fairly knowledgeable 3 = Very knowledgeable 4 = Extremely knowledgeable
5. How long have you been in your current assignment? ____ Years ____ Months (Approx.)						

Section 2: WORK AREAS

Use the following rating scale to describe the effectiveness of each Firefighter in each of 18 work areas during the past 12 months.

Doesn't Meet Requirements		Meets Requirements		Exceeds Requirements	
1 Poor	2 Needs Improvement	3 Just Adequate	4 Fully Acceptable	5 Very Good	6 Excellent
<ul style="list-style-type: none"> Often has trouble performing effectively in this area. Fails to perform acceptably in this area; produces unsatisfactory results. Work is incomplete, inaccurate, or insufficient; makes frequent or serious errors. Work in this area creates additional unnecessary work or problems. Does not perform work in a timely manner in this area. 		<ul style="list-style-type: none"> Consistently performs acceptably in this area. Achieves satisfactory results in this area. Work is sufficiently accurate and complete in this area. Meets basic requirements for work speed and efficiency in this area. 		<ul style="list-style-type: none"> Consistently performs work at a level that exceeds basic requirements in this area. Achieves superior outcomes in this area. Rarely or never makes mistakes in this area. Assists and corrects others' mistakes in this area. Performs work quickly and without wasted effort in this area. Serves as a role model to others for work in this area. 	

NA: Not Able to Observe – insufficient opportunity to observe person during the past 12 months (circle NA).

NP: Not Part of Job – not a part of this person's job (circle NP).

Note: Use the same standards to rate newer Firefighters as longer-term Firefighters. If the Firefighter's performance is less than acceptable for any part of a specific work area, your rating should reflect this. If you have been unable to observe the Firefighter performing one of the listed work areas, do not describe the individual's performance. Instead, circle "NA" (Not Able to Observe) for that particular item. Similarly, if the work area is not part of the Firefighter's job, circle "NP" (Not Part of Job) for that particular item.

Section 2: Your Ratings of Each Firefighter in Each WORK AREA

	FIREFIGHTER RATEES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)
1. Size-up and Initial Response How effectively the Firefighter: evaluates the fire or incident scene to determine what actions initially should be taken; communicates and takes appropriate initial action based on prior preparation as well as size-up.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
2. Building Entry, Ladder Usage, Ventilation, & Overhaul How effectively the Firefighter: forces doors or otherwise enters buildings to search for and rescue victims and to provide access to the fire for offensive firefighting; stabilizes ladder trucks operating aerial and tower ladders to rescue victims; raises, sets up, and climbs ladders; provides access for ventilation; operates master stream devices, etc.; opens or breaks open windows; chops or cuts bolts in roofs; breaks through walls or doors; hangs fan in windows or doors to remove heat, smoke and gas from burning buildings; opens up walls and ceilings; cuts or pulls up floors; moves or turns over debris to check for hidden fire that could rekindle or spread using hooks, axes, and saws.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
3. Using Pumps, Hydrants and Hose Lines How effectively the Firefighter: connects and hooks up engine to fire hydrant; operates pumps to supply water of appropriate pressure and volume for firefighting; uses tools (e.g., wrenches, couplings) necessary for proper setup and operation of hose lines and hydrants; stretches and operates hose lines.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
4. Search and Rescue/Extrication How effectively the Firefighter: searches fire or assigned area to locate victims and obtain further information about the fire, following standard search procedures; extricates victims from vehicles, cave-ins, collapsed buildings, subways, elevators or other entrapments to save lives using shovels, torches, drills, saws, jacks, hand tools, air bags, and other equipment.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP



Firefighter Research-Only Performance Rating Form

Section 2: WORK AREAS (continued)

Use the following rating scale to describe the effectiveness of each Firefighter in each of 18 work areas during the past 12 months.

Doesn't Meet Requirements		Meets Requirements		Exceeds Requirements	
1 Poor	2 Needs Improvement	3 Just Adequate	4 Fully Acceptable	5 Very Good	6 Excellent
<ul style="list-style-type: none"> Often has trouble performing effectively in this area. Fails to perform acceptably in this area; produces unsatisfactory results. Work is incomplete, inaccurate, or insufficient; makes frequent or serious errors. Work in this area creates additional unnecessary work or problems. Does not perform work in a timely manner in this area. 		<ul style="list-style-type: none"> Consistently performs acceptably in this area. Achieves satisfactory results in this area. Work is sufficiently accurate and complete in this area. Meets basic requirements for work speed and efficiency in this area. 		<ul style="list-style-type: none"> Consistently performs work at a level that exceeds basic requirements in this area. Achieves superior outcomes in this area. Rarely or never makes mistakes in this area. Assists and corrects others' mistakes in this area. Performs work quickly and without wasted effort in this area. Serves as a role model to others for work in this area. 	

NA: Not Able to Observe — insufficient opportunity to observe person during the past 12 months (circle NA).

NP: Not Part of Job — not a part of this person's job (circle NP).

Section 2: Your Ratings of Each Firefighter in Each WORK AREA (continued)

	FIREFIGHTER RATEES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)
5. Taking Up & Salvage How effectively the Firefighter: picks up and returns equipment to apparatus so that the company can go back in service; takes into account nature of property and attempts to minimize damage as appropriate when performing clean-up; moves and covers property; covers holes in buildings; redirects or cleans up water in order to minimize damage; uses covers, ropes, staple guns, and other tools.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
6. Providing Victim and Medical Assistance How effectively the Firefighter: provides assistance to victims; provides first aid and direct medical assistance to persons requiring emergency attention.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
7. Inspection How effectively the Firefighter: inspects buildings for code violations or hazards on a periodic basis or during the course of activities; inspects hydrants for operational use.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
8. House Watch How effectively the Firefighter: stands watch to receive incoming alarms and information; answers phones; monitors access to the station house.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
9. Station and Equipment Maintenance How effectively the Firefighter: inspects, cleans, and maintains apparatus, equipment carried on the apparatus, and personal gear and equipment; performs routine housekeeping chores and "committee work".	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP

Section 2: WORK AREAS (continued)

Use the following rating scale to describe the effectiveness of each Firefighter in each of 18 work areas during the past 12 months.

Doesn't Meet Requirements		Meets Requirements		Exceeds Requirements	
1 Poor	2 Needs Improvement	3 Just Adequate	4 Fully Acceptable	5 Very Good	6 Excellent
<ul style="list-style-type: none"> • Often has trouble performing effectively in this area. • Fails to perform acceptably in this area; produces unsatisfactory results. • Work is incomplete, inaccurate, or insufficient; makes frequent or serious errors. • Work in this area creates additional unnecessary work or problems. • Does not perform work in a timely manner in this area. 		<ul style="list-style-type: none"> • Consistently performs acceptably in this area. • Achieves satisfactory results in this area. • Work is sufficiently accurate and complete in this area. • Meets basic requirements for work speed and efficiency in this area. 		<ul style="list-style-type: none"> • Consistently performs work at a level that exceeds basic requirements in this area. • Achieves superior outcomes in this area. • Rarely or never makes mistakes in this area. • Assists and corrects others' mistakes in this area. • Performs work quickly and without wasted effort in this area. • Serves as a role model to others for work in this area. 	

NA: Not Able to Observe – insufficient opportunity to observe person during the past 12 months (circle NA).
NP: Not Part of Job – not a part of this person's job (circle NP).

Section 2: Your Ratings of Each Firefighter in Each WORK AREA (continued)

FIREFIGHTER RATEES:					
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)
10. Professional Development How effectively the Firefighter: devotes the time and effort necessary to expand job skills and capabilities.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
11. Focus and Persistence How effectively the Firefighter: persists in activities; takes appropriate initiative; attends to details; puts forth extra effort as appropriate to complete job tasks.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
12. Teamwork How effectively the firefighter: helps and cooperates with other team members.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
13. Interpersonal Effectiveness How effectively the Firefighter: interacts with other people including the general public.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
14. Compliance with Rules and Procedures How effectively the Firefighter: follows organizational rules, procedures, and standards of conduct.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
15. Physical Performance How effectively the Firefighter: performs work activities that require physical strength, endurance, and flexibility.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
16. Learning and Applying Information How effectively the Firefighter: applies what he/she has learned from a variety of sources to perform the job.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
17. Communication How effectively the Firefighter: listens, understands, and conveys the information needed to accomplish job tasks, orally and by the use of brief written notes.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP
18. Problem Solving How effectively the Firefighter: solves work problems, makes decision, and takes appropriate action.	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP	1 2 3 4 5 6 NA NP

Section 3: Your Ratings of Each Firefighter's WORK HABITS and OUTCOMES

	FIREFIGHTER RATES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)
1. Punctuality: How would you describe the Firefighter's punctuality record during the past 12 months? 1 = Tardy far more often than other Firefighters 2 = Tardy more often than most Firefighters 3 = Tardy about as often as most other Firefighters 4 = Tardy less often than most Firefighters 5 = Rarely or never tardy NA = Unable to observe; do not know	1 2 3 4 5 NA	1 2 3 4 5 NA	1 2 3 4 5 NA	1 2 3 4 5 NA	1 2 3 4 5 NA
2. To what extent has the Firefighter's tardiness interfered with his/her ability to meet fully the job expectations during the past 12 months? 1 = Interfered significantly 2 = Interfered somewhat 3 = Interfered slightly 4 = Interfered not at all NA = Unable to observe; do not know	1 2 3 4 NA	1 2 3 4 NA	1 2 3 4 NA	1 2 3 4 NA	1 2 3 4 NA
3. How many complaints are you aware of about the Firefighter's performance during the past 12 months? (For example, by co-worker, supervisor, resident, other agency.) 1 = 5 or more 2 = 3 to 4 3 = 1 to 2 4 = None NA = Unable to observe; do not know	1 2 3 4 NA	1 2 3 4 NA	1 2 3 4 NA	1 2 3 4 NA	1 2 3 4 NA



Section 4: OVERALL JOB PERFORMANCE during past 12 months

Some People

Many People

Some People

Doesn't Meet Requirements		Meets Requirements		Exceeds Requirements	
1 Poor	2 Needs Improvement	3 Just Adequate	4 Fully Acceptable	5 Very Good	6 Excellent
<ul style="list-style-type: none"> • Often has trouble performing effectively in this area. • Fails to perform acceptably in this area; produces unsatisfactory results. • Work is incomplete, inaccurate, or insufficient; makes frequent or serious errors. • Work in this area creates additional unnecessary work or problems. • Does not perform work in a timely manner in this area. 		<ul style="list-style-type: none"> • Consistently performs acceptably in this area. • Achieves satisfactory results in this area. • Work is sufficiently accurate and complete in this area. • Meets basic requirements for work speed and efficiency in this area. 		<ul style="list-style-type: none"> • Consistently performs work at a level that exceeds basic requirements in this area. • Achieves superior outcomes in this area. • Rarely or never makes mistakes in this area. • Assists and corrects others' mistakes in this area. • Performs work quickly and without wasted effort in this area. • Serves as a role model to others for work in this area. 	

NA: Not Able to Observe – insufficient opportunity to observe person during the past 12 months (circle NA).



Section 4: Your Ratings of Each Firefighter's OVERALL JOB PERFORMANCE

	FIREFIGHTER RATEES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)
Considering the Firefighter's overall job performance, how would you describe the overall effectiveness of the Firefighter during the past 12 months?	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA



Section 5: Your RELATIVE RANKING of Each Firefighter

	FIREFIGHTER RATES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)
Using Technical Firefighting Capabilities – Safety and efficiently performs on-scene technical firefighting and emergency operations; uses experience and up-to-date technical knowledge and skill to accomplish firefighting duties and tasks effectively.					
Compared to all Firefighters in your company who perform similar work activities, how would you rank this Firefighter's job performance in the work area of <i>Using Technical Firefighter Capabilities</i> during the past 12 months? In other words, if you were to rank the job performance of all the Firefighters in your company from best to worst in the work area of <i>Using Technical Firefighter Capabilities</i> , where would this person fall?	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA
1 = Bottom 10% of Firefighters in your company 2 = Bottom 30% of Firefighters in your company 3 = Bottom 50% of Firefighters in your company 4 = Top 50% of Firefighters in your company 5 = Top 30% of Firefighters in your company 6 = Top 10% of Firefighters in your company					

Section 5: Your RELATIVE RANKING of Each Firefighter (continued)

	FIREFIGHTER RATES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
<p>Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER</p> <p>(Names and Code Numbers of Firefighters listed on your Rating Assignment Form)</p>	<p>_____ (Name)</p> <p>_____ (Code Number)</p>	<p>_____ (Name)</p> <p>_____ (Code Number)</p>	<p>_____ (Name)</p> <p>_____ (Code Number)</p>	<p>_____ (Name)</p> <p>_____ (Code Number)</p>	<p>_____ (Name)</p> <p>_____ (Code Number)</p>
<p><u>Getting Along with Others</u> – Is a good teammate; interacts effectively with the public; works well with co-workers by coordinating and cooperating; treats others with respect and acts in a considerate manner.</p> <p>Compared to all Firefighters in your company who perform similar work activities, how would you rank this Firefighter's job performance in the work area of <u>Getting Along with Others</u> during the past 12 months? In other words, if you were to rank the job performance of all the Firefighters in your company from best to worst in the work area of <u>Getting Along with Others</u>, where would this person fall?</p> <p>1 = Bottom 10% of Firefighters in your company 2 = Bottom 30% of Firefighters in your company 3 = Bottom 50% of Firefighters in your company 4 = Top 50% of Firefighters in your company 5 = Top 30% of Firefighters in your company 6 = Top 10% of Firefighters in your company</p>	<p>1 2 3 4 5 6 NA</p>	<p>1 2 3 4 5 6 NA</p>	<p>1 2 3 4 5 6 NA</p>	<p>1 2 3 4 5 6 NA</p>	<p>1 2 3 4 5 6 NA</p>

Section 5: Your RELATIVE RANKING of Each Firefighter (continued)

	FIREFIGHTER RATES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)
<p>Dependable Organizational Citizen – Acts professionally and responsibly; is reliable and someone you can count on; willingly assists others and does fair share; focuses on goals of the department.</p> <p>Compared to all Firefighters in your company who perform similar work activities, how would you rank this Firefighter's job performance in the work area of acting as a Dependable Organizational Citizen during the past 12 months? In other words, if you were to rank the job performance of all the Firefighters in your company from best to worst in the work area of acting as a Dependable Organizational Citizen, where would this person fall?</p> <p>1 = Bottom 10% of Firefighters in your company 2 = Bottom 30% of Firefighters in your company 3 = Bottom 50% of Firefighters in your company 4 = Top 50% of Firefighters in your company 5 = Top 30% of Firefighters in your company 6 = Top 10% of Firefighters in your company</p>	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA

Section 5: Your RELATIVE RANKING of Each Firefighter (continued)

	FIREFIGHTER RATES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)	_____ (Name) _____ (Code Number)
<p>Stamina and Strength – Uses physical fitness, agility, and prowess to perform tasks safely and effectively.</p> <p>Compared to all Firefighters in your company who perform similar work activities, how would you rank this Firefighter's job performance in the work area of <i>Stamina and Strength</i> during the past 12 months? In other words, if you were to rank the job performance of all the Firefighters in your company from best to worst in the work area <i>Stamina and Strength</i>, where would this person fall?</p> <p>1 = Bottom 10% of Firefighters in your company 2 = Bottom 30% of Firefighters in your company 3 = Bottom 50% of Firefighters in your company 4 = Top 50% of Firefighters in your company 5 = Top 30% of Firefighters in your company 6 = Top 10% of Firefighters in your company</p>	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA

Section 5: Your RELATIVE RANKING of Each Firefighter (continued)

	FIREFIGHTER RATEES:				
	Firefighter 1	Firefighter 2	Firefighter 3	Firefighter 4	Firefighter 5
Please fill in each FIREFIGHTER'S LAST NAME, FIRST NAME, and CODE NUMBER (Names and Code Numbers of Firefighters listed on your Rating Assignment Form)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)	(Name) (Code Number)
Overall Ranking Compared to all Firefighters in your company who perform similar work activities, how would you rank this Firefighter's overall job performance during the past 12 months? In other words, if you were to rank the overall job performance of all the Firefighters in your company from best to worst, where would this person fall? 1 = Bottom 10% of Firefighters in your company 2 = Bottom 30% of Firefighters in your company 3 = Bottom 50% of Firefighters in your company 4 = Top 50% of Firefighters in your company 5 = Top 30% of Firefighters in your company 6 = Top 10% of Firefighters in your company	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA	1 2 3 4 5 6 NA

Thank you very much for your help.

Appendix P. Content Validation Rating Form



FIREFIGHTER EXAM RATING FORM

July 22, 2011

Name: _____

Job Title: _____

Seat Number: _____

Current Assignment (Engine, Ladder, other): _____

The information you provide in this booklet will be used in a research study to evaluate a new draft test that will be used to hire future Firefighters. Your responses will have a direct impact on the quality and effectiveness of the new tests, and ultimately, the quality of future recruits.

Before we begin, it is important to note that the information you provide in this booklet:

- Will be collected directly by PSI, an independent research company;
- Will be used only by PSI and only for the purposes of this study;
- Will be kept strictly confidential

Please remember, you must keep confidential the information you learn about the test. You must not discuss or share information about the new test with anyone.

Thank you for your help.

Test Exercise Ratings

Instructions

FDNY Firefighters must possess certain abilities in order to learn and perform the job successfully. These abilities were identified in a recent job analysis. Today you will be reviewing draft portions of a new test that is designed to be representative of a number of these important abilities.

Sections of the test will be presented to you on a projection screen. The test sections require the examinee to perform certain exercises that involve listening, observing, reading, recalling information, solving problems, and working quickly and accurately with information. After one or more sections of the test are presented, you will be asked to indicate the degree to which the test exercises require each of 18 important Firefighter abilities that were identified in the recent job analysis. The 18 abilities are listed in this form.

Use the rating scale below to indicate the degree to which each listed ability is required to successfully complete the test exercise. As you make your rating, consider the extent to which it is possible to perform the exercise successfully without the ability. Mark your ratings on your rating form.

To what extent is this ability required to perform the test exercise?

- 2 - Critical: this ability is essential to perform successfully on the test exercise. Successful performance on the exercise would be extremely difficult or impossible without this ability.
- 1 - Important: this ability is very helpful to perform successfully on the test exercise. Successful performance on the exercise would be difficult without this ability.
- 0 - Not important: this ability is not needed to perform successfully on the test exercise. Successful performance on the exercise is possible without this ability.

For example, after viewing the Equipment Lesson sections of the test and the types of questions that are asked, consider what is involved on the part of the examinee in order to answer the questions. Consider the nature of the information presented to the examinee and what the examinee has to do to answer correctly. If you feel that "007-Ability to listen to, and understand information on how to perform a task or series of tasks from a trainer or others (for example, instructions from a commanding officer, training information on specific steps to follow in different situations)" is critical for successful performance in the exercise, then you would mark "2" on your rating form under the "Equipment" column. If you feel that the ability is important to successfully perform in the exercise, then you would mark "1". And if you feel that the ability is not important for the test exercise then you would mark "0" on your rating sheet.

You will be reviewing the test exercises and questions in four groups: (a) Equipment Lesson, (b) Operations Manual, (c) Emergency Report, and (d) Hazardous Material Lesson.

FIREFIGHTER ABILITIES

To what extent is this ability required to perform the test exercise?	a. Equipment Lesson	b. Operations Manual	c. Emergency Report	d. Hazardous material Lesson
2 = Critical: this ability is essential to perform successfully on the test exercise. Successful performance on the exercise would be extremely difficult or impossible without this ability.				
1 = Important: this ability is very helpful to perform successfully on the test exercise. Successful performance on the exercise would be difficult without this ability.				
0 = Not Important: this ability is not needed to perform successfully on the test exercise. Successful performance on the exercise is possible without this ability.				
001-Ability to read and interpret short messages written in English (for example, notes, log entries, teleprinter tickets)				
002-Ability to read routine documents written in English (for example, bulletins, articles, notices, announcements) to keep apprised of current job-related information.				
003-Ability to read and interpret technical materials written in English (for example, instructional manuals, operating manuals, and other official FDNY documents) to learn new information and/or update job knowledge.				
005-Ability to write brief notes/statements in English (for example, fill in forms, log entries, take messages) legibly, completely, and accurately.				
007-Ability to listen to, and understand information on how to perform a task or series of tasks from a trainer or others (for example, instructions from a commanding officer, training information on specific steps to follow in different situations).				
008-Ability to understand information presented orally in English, both in person (for example, in a training session) and from a variety of communications devices (for example, radio, phone, intercom).				
009-Ability to listen to and understand people in emergency situations (for example, people who are upset, frightened, confused).				

To what extent is this ability required to perform the test exercise?	a. Equipment Lesson	b. Operations Manual	c. Emergency Report	d. Hazardous material Lesson
2 = Critical: this ability is essential to perform successfully on the test exercise. Successful performance on the exercise would be extremely difficult or impossible without this ability.				
1 = Important: this ability is very helpful to perform successfully on the test exercise. Successful performance on the exercise would be difficult without this ability.				
0 = Not Important: this ability is not needed to perform successfully on the test exercise. Successful performance on the exercise is possible without this ability.				
010-Ability to state ideas clearly and concisely when speaking in English (for example, giving instructions, explaining procedures, providing technical information).				
016-Ability to quickly and accurately compare letters, numbers, information and objects (for example, addresses, names, radio codes) to determine if they are the same or different.				
017-Ability to concentrate on the work to be performed in spite of distractions, keeping aware of one's surroundings (for example, during a highway accident).				
018-Ability to remain attentive while performing routine or repetitive tasks (for example, taking up hose line).				
021-Ability to observe another person performing/demonstrating an activity to learn how to perform the activity.				
051-Ability to learn firefighting procedures and techniques.				
052-Ability to learn job-related rules and regulations.				
065-Ability to perform arithmetic computations (for example, add, subtract, multiply, divide) to solve work problems (for example, number of hose lengths needed to reach a fire).				
072-Ability to analyze mistakes to avoid repeating them (for example, to review fire scene errors after the incident has concluded).				
088-Ability to recall information learned in training even when it is used infrequently.				
089-Ability to recall information regarding specific events & activities (for example, tactics used in prior fire scenes).				

Appendix Q. Memo to Content Validation Session Participants

July 22 Pre-Test and Content Validity Rating Session

You have been invited to attend a session on July 22, from 7:00 AM to 4:00 PM, at the DCAS Testing Center located at 210 Joraleman Street, Brooklyn. During this session we will ask you to assist in taking a draft version of the new entry level firefighter exam and to provide feedback on the exam itself.

***Note:** Your responses to the draft test will be kept confidential and will not be shared with the department. The data will be used by an independent research company (PSI) and only for purposes of evaluating the draft test. Likewise, you must keep confidential the information you learn about the test. You must not discuss or share information about the new test with anyone.*

This is one important step in the project being completed to design the next entry level firefighter examination. You are one of 30 firefighters and officers selected to preview and complete an initial draft of the new firefighter examination. You have been selected at random to participate in this process.

During the session you will be asked to complete a draft version of the new examination in a computer administered format. You will be shown a variety of questions written to measure various skills and abilities identified as important to the job of entry level firefighter. In addition to answering all of the test questions you will be asked to offer your feedback and reactions to the test items.

After you finish taking the exam, you also will be asked to provide your best judgments about the relevance of the test items to the job as well as evaluating other factors such as difficulty of the item and clarity.

We anticipate that the session will require a full 8 hour day, including appropriate breaks; and lunch provided at the testing site.

We hope you will attend the session and ask that you offer your best efforts in both completing the exam and providing your input.

Appendix R. Job Performance Rating Data Quality Control Checks

1. Exclude ratings if missing ratings on more than 20% of the performance dimensions. *Result:* No cases excluded due to missing data
2. Exclude ratings if the rater indicated they were only "slightly familiar" with the Firefighter. *Result:* 14 ratings were excluded, resulting in 8 Firefighters being excluded from the study.
3. For Firefighters for whom two ratings were obtained, select the single best rater per Firefighter for analysis purposes: (a) select highest level of familiarity of firefighter being rated; (b) if tied, select rating with highest time in same company; (c) if tied, select highest time as a supervisor of the Firefighter. *Result:* ratings were available for up to 764 firefighters, depending on the particular area being rated.
4. Identify potential rater outliers and exclude their ratings:
 - a. Develop regression model to predict ratings using tenure, time in same company, and hire list (whether the Firefighter was promoted from an EMT position, or hired from the open candidate pool);
 - b. compute residual ratings for three criterion composites (1) mean of all performance ratings (excluding work outcomes section), (2) problem solving, learning & concentration rating composite; and (3) fire scene activities task composite.
 - c. Identify and exclude outlier ratings using 3 standard deviation (SD) rule applied to residual scores. *Result:* Initially excluded 10 rating sets, replaced 2 with alternate raters, re-ran regression and identified 1 additional outlier. Process resulted in 9 Firefighter ratees excluded from the sample.

Appendix S. Job Performance Ratings: Descriptive Statistics

<i>Work Areas</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Reliability*</i>
1. Size-up and Initial Response	750	4.25	.92	0.28
2. Building Entry, Ladder Usage, Ventilation, & Overhaul	490	4.20	.95	0.31
3. Using Pumps, Hydrants and Hose Lines	499	4.44	.95	0.19
4. Search and Rescue/Extrication	479	4.21	.89	0.31
5. Taking Up & Salvage*	750	4.53	.83	0.08
6. Providing Victim and Medical Assistance	644	4.51	1.02	0.13
7. Inspection*	754	4.06	.86	0.01
8. House Watch	755	4.32	.99	0.13
9. Station and Equipment Maintenance	757	4.63	.96	0.25
10. Professional Development	756	4.21	1.02	0.28
11. Focus and Persistence	756	4.26	.98	0.22
12. Teamwork	757	4.53	1.00	0.18
13. Interpersonal Effectiveness	755	4.38	.96	0.30
14. Compliance with Rules and Procedures	757	4.44	.95	0.26
15. Physical Performance	756	4.66	.91	0.21
16. Learning and Applying Information	750	4.30	.87	0.14
17. Communication*	756	4.24	.92	0.05
18. Problem Solving	756	4.31	.94	0.23
Punctuality - Frequency	742	4.64	.87	0.20
Punctuality - Effect on Performance	715	3.92	.39	0.31
Performance Complaints	741	3.62	.69	0.37
Overall Performance – Global Rating	741	4.45	.90	0.28
<i>Relative Rankings</i>				
Using Technical Firefighter Capabilities	750	4.37	1.23	0.21
Getting Along with Others	755	4.56	1.17	0.31
Dependable Organizational Citizen	752	4.59	1.14	0.28
Stamina & Strength	754	4.58	1.16	0.23
Overall Relative Ranking	744	4.42	1.20	0.35
<i>Composites</i>				
Fire Scene Activities	749	4.27	.81	0.30
Station, Training & Medical Activities	756	4.42	.77	0.21
Problem Solving, Learning & Concentration	756	4.29	.80	0.25
Cooperation & Compliance	757	4.45	.80	0.28
Cognitive Performance Composite	757	4.34	.79	0.26
Noncognitive Performance Composite	757	4.74	.88	0.42

Note: Reliabilities are intra-class correlation coefficients based on cases with two raters. Rating scales 5, 7 and 17 were later excluded due to low reliability. Cognitive Performance Composite = Mean of Using Technical Firefighter Capabilities, Fire Scene Activities, Station, Training & Medical Activities, and Problem Solving, Learning & Concentration. Noncognitive Performance Composite = Mean of Performance Complaints (rescaled to 6 point maximum), Getting Along with Others, Dependable Organizational Citizen, and Cooperation & Compliance.

Appendix T. Principal Components Analysis of Job Performance Ratings

a. Task Clusters - Rotated Factor Loadings.

	<i>Component</i>	
	1 Fire Scene Activities	2 Station, Training & Medical Activities
Building Entry, Ladder Usage, Ventilation, & Overhaul	.865	.224
Search & Rescue/Extrication	.864	.183
Size Up & Initial Response	.828	.312
House Watch	.184	.765
Station & Equipment Maintenance	.305	.764
Providing Victim & Medical Assistance	.102	.728
Using Pumps, Hydrants and Hose Lines	.429	.601
Professional Development	.504	.555

Note: Principal Component Analysis with Varimax rotation; converged in 3 iterations.
Assignment to composite denoted by loading in bold italics.

b. Abilities & Characteristics - Rotated Factor Loadings

	<i>Component</i>		
	1 Problem Solving, Learning & Concentration	2 Cooperation & Compliance	3 Physical Performance
Learning & Applying Information	.833	.252	.109
Problem Solving	.786	.270	.214
Focus & Persistence	.784	.294	.165
Interpersonal Effectiveness	.168	.863	.098
Compliance with Rules & Procedures	.315	.732	.078
Teamwork	.476	.668	.169
Physical Performance	.230	.142	.960

Note: Principal Component Analysis with Varimax rotation; converged in 5 iterations.
Assignment to composite denoted by loading in bold italics.

Appendix U. Descriptive Statistics for Probationary Training Academy Scores

	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Correlations</i>		
				<i>Quiz</i>	<i>Midterm</i>	<i>Final</i>
Quizzes	586	84.35	5.50	--		
Midterm Score	585	88.48	7.05	.36**	--	
Final Score	543	88.59	6.54	.29**	.17*	--
Exercises	223	2.60	.234	.37**	-.15*	.20**

Note: Mean of 6 quiz scores; mean of exercise scores.

**p<.01, *p<.05, one-tailed.

Appendix V. Firefighter Test Data Quality Control Checks

Firefighter test data records were excluded from the analysis if they met any of the following criteria:

1. *Did not complete the test on the first attempt and were sent back to retake the test;*
2. *Did not answer enough items within the test portion. For cognitive portions, omitted more than 1 item; for speeded test portion omitted more 30 items (first percentile of examinees); and non-cognitive portion, omitted more than 10% of the 154 non-cognitive items.*
3. *Did not spend the minimum amount of time specified in Table V-1 to be considered a reasonable effort.*
4. *Scored at or below chance-level; i.e., the score that would be obtained via random guessing.*

Table V-1. Quality Control Information for Experimental Test Form A.

Test Portion	Minimum time	Chance score*
1 - Equipment Lecture Overview	10.6	2.75
2 - Equipment Lecture: Safety Procedure	4.9	1.25
3 - Equipment Demonstration	6.9	2.50
4 - Equipment Q&A	7.0	3.50
5 - Equipment Operations Manual	6.5	8.00
6 - Equipment Emergency Report	2.0	n/a
7 - Hazardous Material Lecture: Overview	5.4	0.50
8 - Hazardous Material Demonstration	4.7	1.50
9 - Hazardous Material Lecture: Communication	4.4	1.20
10 - Hazardous Material Q&A	7.0	4.50
11 - Background Information Survey	12.8	n/a

* $SUM(1/a)$; where a = # alternatives per item, summed across N-1 items in the portion

Appendix W. Psychometric Properties of Experimental CBT Form A

Table W-1. Summary of Item Analyses.

<i>Cognitive Test Components</i>	N	M	SD	Min	Max possible	Ceiling	Alpha
1. Equipment Lecture Overview	689	11.13	2.25	3.00	14	1.28	0.47
2. Equipment Lecture: Safety Procedure	696	6.96	1.19	1.52	8	0.88	0.43
3. Equipment Demonstration	695	10.37	1.31	2.67	12	1.25	0.31
4. Equipment Q&A	700	15.17	1.60	5.00	16	0.52	0.53
5. Equipment Operations Manual	702	31.09	5.85	8.33	41	1.69	0.82
6. Equipment Emergency Report	718	22.38	5.50	3.00	40	3.20	n/a*
7. Hazardous Material Lecture: Overview	688	7.16	1.44	0.67	9	1.28	0.35
8. Hazardous Material Demonstration	701	14.86	1.67	4.00	16	0.68	0.40
9. Hazardous Material Lecture: Communication	705	9.71	2.25	1.67	13	1.46	0.32
10. Hazardous Material Q&A	682	9.22	1.53	4.50	11	1.16	0.32
<i>Non-Cognitive Scales</i>							
1. Achievement	692	32.05	5.04	14	44	2.37	0.58
2. Activity	698	22.71	4.75	8	32	1.96	0.53
3. Agreeableness	688	38.49	7.04	20	56	2.49	0.56
4. Cautiousness	693	25.88	5.97	9	40	2.36	0.57
5. Dependability	689	32.98	6.05	14	44	1.82	0.61
6. Dominance	697	17.49	2.98	5	24	2.19	0.37
7. Even Tempered	691	30.79	5.17	17	44	2.56	0.50
8. Low Anxiety	685	41.11	6.88	17	56	2.17	0.58
9. Order	698	19.16	2.97	7	24	1.63	0.39
10. Persistence	688	27.15	3.87	13	32	1.25	0.39
11. Physical Activity	697	9.03	2.29	1	12	1.30	0.51
12. Work Experience	695	9.18	5.37	0	20	2.02	0.82
13. Self Esteem	697	22.63	3.28	10	28	1.64	0.26
14. Sociability	695	18.37	4.67	3	32	2.92	0.60

Ceiling = (max possible score – mean) / SD

*Alpha not applicable to speeded test.

Appendix X. Validity Results for Experimental CBT (Form A)

Table X-1. Validity of Cognitive Test Scores Predicting Job Performance and Academy Performance.

Cognitive Test Components	Job Performance							Academy Performance			
	Using Technical Firefighter Capabilities Ranking	Fire Scene Activities	Station, Training & Medical Activities	Problem Solving, Learning & Concentration	Overall Performance Rating	Overall Ranking	Performance Complaints	Quizzes	Midterm Score	Final Score	Exercises
1. Equipment Lecture Overview	.06	.10** (.19**)	.08* (.18*)	.10** (.19**)	.08* (.16*)	.10** (.17**)	.05	.22** (.25**)	.22** (.24**)	.14** (.16**)	.02
2. Equipment Lecture: Safety Procedure	.06	.06	.08* (.18*)	.08* (.15*)	.07* (.12*)	.07* (.12*)	.05	.19** (.21**)	.16** (.18**)	.07	.04
3. Equipment Demonstration	.06	.09* (.16*)	.04	.06	.06	.08* (.14*)	.09* (.14*)	.15** (.17**)	.16** (.18**)	.13** (.14**)	.03
4. Equipment Q&A	.06	.09* (.16*)	.07* (.15*)	.13** (.25**)	.06	.09* (.15*)	.08* (.14*)	.19** (.21**)	.16** (.18**)	.16** (.18**)	.14* (.15*)
5. Equipment Operations Manual	.07* (.14*)	.08* (.14*)	.10** (.22**)	.12** (.23**)	.10** (.19**)	.09* (.15*)	.09* (.14*)	.36** (.40**)	.31** (.34**)	.16** (.18**)	-.02
6. Equipment Emergency Report	.08* (.17*)	.14** (.26**)	.09* (.19*)	.11** (.21**)	.10** (.18**)	.11** (.19**)	.08* (.14*)	.22** (.24**)	.22** (.24**)	.09* (.10*)	.10
7. Hazardous Material Lecture: Overview	.00	.02	.06	.03	.02	.03	.02	.19** (.21**)	.19** (.21**)	.08* (.09*)	-.03
8. Hazardous Material Demonstration	.04	.08* (.14*)	.05	.05	.03	.04	.07* (.11*)	.17** (.19**)	.19** (.22**)	.13** (.14**)	-.05
9. Hazardous Material Lecture: Communication	.01	.10** (.18**)	.09* (.19*)	.05	.06	.07* (.12*)	.09** (.15**)	.23** (.26**)	.20** (.22**)	.09* (.10*)	-.01
10. Hazardous Material Q&A	.08* (.17*)	.09* (.16*)	.09* (.20*)	.10** (.19**)	.08* (.15*)	.09* (.15*)	.08* (.13*)	.20** (.22**)	.18** (.20**)	.15** (.16**)	.19** (.21**)
N	634- 668	635- 668	641- 675	641- 675	628- 660	632- 665	629-661	501- 525	500- 524	464- 487	189- 201

**p<.01; *p<.05, one-tailed.

Note: Correlations disattenuated for criterion unreliability are shown in parentheses; corrections are made using criterion reliability estimates reported in Appendix S.

Table X-2. Validity of Non-Cognitive Test Scores Predicting Job Performance.

<i>Non-Cognitive Scales</i>	Performance Complaints	Getting Along with Others Ranking	Dependable Organizational Citizen Ranking	Cooperation & Compliance	Overall Performance Rating	Overall Ranking
1. Achievement	.00	.00	.01	.02	.01	-.02
2. Activity	.01	-.01	.01	-.02	.01	.03
3. Agreeableness	.04	.04	.00	.07* (.13*)	.03	-.03
4. Cautiousness	.05	.02	.05	.06	-.02	.06
5. Dependability	.07* (.12*)	.06* (.11*)	.10** (.18**)	.02	.07* (.13*)	.08* (.14*)
6. Dominance	-.01	.00	.05	.01	.02	.02
7. Even Tempered	.06	.05	.05	.04	-.03	.00
8. Low Anxiety	.12** (.20**)	.08* (.15*)	.07* (.13*)	.07* (.12*)	.04	.03
9. Order	.03	.02	.04	.01	.03	.08* (.13*)
10. Persistence	.02	.06	.05	.04	.06	.06
11. Physical Activity	.08* (.14*)	.06	.05	-.01	.02	.06
12. Work Experience	.06	.02	.06	-.02	.10** (.18**)	.10** (.16**)
13. Self Esteem	.16** (.26**)	.11** (.19**)	.07* (.14*)	.04	.07* (.13*)	.09* (.14*)
14. Sociability	.03	.05	.06	.02	.02	.03
<i>N</i>	650	661	658	664	650	653

**p<.01; *p<.05, one-tailed.

Note: Pre-TVB scoring algorithms used to compute non-cognitive scale scores. Correlations disattenuated for criterion unreliability are shown in parentheses; corrections are made using criterion reliability estimates reported in Appendix S. Scales in bold were selected for final CBT.

Table X-3. Criterion-related Validity Evidence for the CBT (Form A)

	<i>Overall Job Performance Rating</i>		<i>Overall Job Performance Ranking</i>		<i>Cognitive Performance Composite</i>		<i>Noncognitive Performance Composite</i>		<i>Academy Criterion Composite</i>	
	N	r	N	r	N	r	N	r	N	r
Cognitive score	601	.12** (.23**)	604	.14** (.24**)	615	.14** (.27**)	615	.11** (.17**)	472	.36** (.40**)
Noncognitive score	650	.07* (.13*)	653	.06	664	.06* (.12*)	664	.12** (.19**)	513	.03
CBT Total Score	592	.13** (.25**)	595	.14** (.24**)	606	.14** (.27**)	606	.17** (.26**)	464	.27** (.30**)

**p<.01; *p<.05, one-tailed.

Note: Correlations disattenuated for criterion unreliability are shown in parentheses; corrections are made using criterion reliability estimates reported in Appendix S.

Appendix Y. Construct Validity Tables

Table Y-1. Zero-order Correlations: Cognitive Test Scores and Marker Tests (EAS).

<i>Cognitive Test Components</i>	<i>EAS1 Verbal Comp.</i>	<i>EAS2 Numerical Ability</i>	<i>EAS4 VSA</i>	<i>EAS7 Verbal Reasoning</i>
1. Equipment Lecture	.13**	.20**	.27**	.22**
2. Equipment Lecture: Safety	.09*	.18**	.12**	.16**
3. Equipment Demonstration	.14**	.12**	.19**	.14**
4. Equipment Q&A	.13**	.16**	.16**	.11**
5. Reading & Arithmetic Total	.19**	.30**	.29**	.30**
6. Emergency Report	.14**	.26**	.44**	.24**
7. Hazardous Material Lecture Overview	.10**	.14**	.21**	.16**
8. Hazardous Material Demonstration	.10*	.18**	.22**	.16**
9. Hazardous Material Lecture Communication	.12**	.20**	.25**	.24**
10. Hazardous Material Q&A	.11**	.15**	.24**	.24**

**p<.01; *p<.05 one-tailed.

N = 670 – 705.

Tests in bold were selected for final CBT.

Table Y-2. Zero-order Correlations: Non-Cognitive Test Scores and Marker Tests (BFI and CPI).

Non-Cognitive Scales	Big-Five Inventory					CPI			
	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Work orientation	Achievement	Amicability	Social Conformity
1. Achievement	.19**	.31**	.36**	-.32**	.29**	.31**	.49**	.27**	.34**
2. Activity	.25**	.17**	.35**	-.19**	.12**	.13**	.25**	.20**	.18**
3. Agreeableness	.23**	.47**	.35**	-.37**	.23**	.31**	.37**	.32**	.24**
4. Cautiousness	-.12**	.20**	.22**	-.11**	-.01	.36**	.33**	.33**	.26**
5. Dependability	.21**	.40**	.55**	-.42**	.20**	.31**	.42**	.34**	.35**
6. Dominance	.35**	.27**	.37**	-.33**	.30**	.23**	.38**	.21**	.28**
7. Even Tempered	.13**	.37**	.31**	-.39**	.15**	.27**	.33**	.35**	.28**
8. Low Anxiety	.29**	.34**	.39**	-.54**	.18**	.34**	.29**	.38**	.28**
9. Order	.13**	.13**	.35**	-.15**	.05	.24**	.29**	.22**	.20**
10. Persistence	.15**	.13**	.32**	-.21**	.21**	.11**	.24**	.03	.18**
11. Physical Activity	.26**	.13**	.25**	-.24**	.18**	.14**	.24**	.16**	.22**
12. Work Experience	.21**	.03	.14**	-.13**	.15**	.09*	.12**	.11**	.15**
13. Self Esteem	.20**	.24**	.39**	-.36**	.07	.27**	.32**	.33**	.28**
14. Sociability	.42**	.26**	.27**	-.34**	.28**	.21**	.27**	.21**	.21**

**p<.01; *p<.05, one-tailed.

N = 692 – 695.

Pre-TVB scoring algorithms used to compute non-cognitive scale scores.

Scales in bold were selected for final CBT.

Table Y-3. Zero-order Correlations: Non-Cognitive Test Scores and Marker Tests (PRB).

Non-Cognitive Scales	PRB - Compliance with Rules	PRB - Conventional	PRB - Reliability Index
1. Achievement	.24**	-.13**	.18**
2. Activity	.15**	-.13**	.07*
3. Agreeableness	.22**	-.08*	.15**
4. Cautiousness	.36**	-.05	.21**
5. Dependability	.30**	.02	.28**
6. Dominance	.21**	-.10**	.18**
7. Even Tempered	.23**	-.03	.23**
8. Low Anxiety	.26**	-.02	.26**
9. Order	.24**	-.08*	.16**
10. Persistence	.10**	-.020	.09**
11. Physical Activity	.17**	.00	.16**
12. Work Experience	.08*	-.08*	.04
13. Self Esteem	.29**	-.02	.25**
14. Sociability	.10**	-.14**	.04

*p<.01; *p<.05, one-tailed.

N = 685.

Pre-TVb scoring algorithms used to compute non-cognitive scale scores.

Scales in bold were selected for final CBT.

Appendix Z. Quality Control Criteria for Equivalency Study Test Data.

Test Form	Chance Score*
Form A	
1 - Aqua-verter Lecture Overview	2.25
2 - Aqua-verter Lecture: Safety Procedure	1.25
4 - Aqua-verter Q&A	3.50
5 - Aqua-verter Operations Manual	5.75
Total score cutoff**	12.75
Form B	
1 - Hydra-verter Lecture Overview	4.50
2 - Hydra-verter Lecture: Safety Procedure	2.875
4 - Hydra-verter Q&A	6.25
5 - Hydra-verter Operations Manual	11.75
Total score cutoff**	25.375
Form C	
1 - Hydra-verter Lecture Overview	4.50
2 - Hydra-verter Lecture: Safety Procedure	2.875
4 - Hydra-verter Q&A	6.25
5 - Hydra-verter Operations Manual	11.75
Total score cutoff**	25.375
Form D	
1 - Hydra-verter Lecture Overview	4.50
2 - Hydra-verter Lecture: Safety Procedure	2.875
4 - Hydra-verter Q&A	6.25
5 - Hydra-verter Operations Manual	11.75
Total score cutoff**	25.375

* $SUM(1/a)$; where $a = \#$ alternatives per item, summed across $N-1$ items in the portion

**Sum of portion chance scores used as threshold for excluding outliers.

APPENDIX AA. Derivation of CBT Scoring Weights

Table AA-1. Job Analysis-based Weights for Scoring the CBT Cognitive Portion.

Cognitive Test Component	Mean of Linked Task Category ratings*	Relative Percent	Scoring Weight
Video Lesson	55.0	69%	0.70
Ability to Learn and Apply Information (KSA # 21, 51, 52, 88, 89)			
Listening Comprehension (KSA # 7, 8, 9)			
Reasoning (KSA # 72)			
Operations Manual	25.2	31%	0.30
Reading Comprehension (KSA # 1, 2, 3)			
Basic Arithmetic (KSA # 65)			
Reasoning (KSA #72)			

*Average Sum of ratings of linked Task Categories. KSA numbers correspond to original numbers used in the 2011 job analysis survey of abilities and characteristics.

Table AA-2. Firefighter Abilities Measured by the CBT Cognitive Portion.

KSA #	Video Lesson
7	Ability to listen to, and understand information on how to perform a task or series of tasks from a trainer or others (for example, instructions from a commanding officer, training information on specific steps to follow in different situations).
8	Ability to understand information presented orally in English, both in person (for example, in a training session) and from a variety of communications devices (for example, radio, phone, intercom).
9	Ability to listen to and understand people in emergency situations (for example, people who are upset, frightened, confused).
21	Ability to observe another person performing/demonstrating an activity to learn how to perform the activity.
51	Ability to learn firefighting procedures and techniques.
52	Ability to learn job-related rules and regulations.
72	Ability to analyze mistakes to avoid repeating them (for example, to review fire scene errors after the incident has concluded).
88	Ability to recall information learned in training even when it is used infrequently.
89	Ability to recall information regarding specific events and activities (for example, tactics used in prior fire scenes).
Operations Manual	
1	Ability to read and interpret short messages written in English (for example, notes, log entries, teleprinter tickets).
2	Ability to read routine documents written in English (for example, bulletins, articles, notices, announcements) to keep apprised of current job-related information.
3	Ability to read and interpret technical materials written in English (for example, instructional manuals, operating manuals, and other official FDNY documents) to learn new information and/or update job knowledge.
65	Ability to perform arithmetic computations (for example, add, subtract, multiply, divide) to solve work problems (for example, number of hose lengths needed to reach a fire).
72	Ability to analyze mistakes to avoid repeating them (for example, to review fire scene errors after the incident has concluded).

Note: KSA # is the original item number that appeared in the Survey of Abilities and Characteristics.

AA-3. Alternatives Examined for Weighting Cognitive vs. Non-cognitive Test Portions.

a. Job Analysis-based Weights for Cognitive vs. Non-cognitive Test Portions

Cognitive Test Component	Mean of Linked Task Cluster ratings*	Relative Weight
Cognitive Portion KSAs: 1,2,3,7, 8, 9,21,51,52,65,72, 88,89	43.7	45%
Non-cognitive Portion KSAs: 36,102,103,41,45,48,95,96,97,94, 111, 112, 50, 46, 47, 17, 18,104,115,38, 49,105, 39, 43,122, 125	52.5	55%

*Average Sum of ratings of linked Task Clusters.

b. Regression-based Weights for Cognitive vs. Non-cognitive Test Portions

	Standardized Regression Weight	Relative Weight
Cognitive Portion (70/30 weight)	.14	64%
Non-cognitive Portion	.08	36%

F = 8.23 (df = 2, 603); p <.001

Note: Criterion=job performance rating composite (cognitive + non-cognitive ratings).

Appendix AB. Derivation of Minimum Passing Score on the CBT

	Regression Weight	Standard Error	t-test	p
Regression parameters				
Slope (a)	1.18495	0.31517	3.76	<.001
Intercept (b)	76.13780	2.91901	26.08	<.0001
Prediction equation: CBT = a (6.0) + b – 1.96*SEE				
Cut score (CBT) = 59.9				
SEE=11.933; F = 14.14 (df=1, 604); p <.001				

Note: Criterion=job performance rating composite (cognitive + non-cognitive ratings). Test scores were standardized using the weighted mean and SD of candidate scores across alternate forms B, C, and D.

CBT scores reflect item scoring modifications by the Test Validation Board.

The job performance ratings were made on a 6-point scale, where 3="Just Adequate." Because two composites (cognitive and non-cognitive) were added, the scale total composite scale ranged from 2 to 12, and 6.0 corresponded to "Just Adequate."

Appendix AC. CBT Scale Score Formulas

Formula
Form B1
CBT Total at or above Cut Score $X' = 0.43228 (X) + 44.10663$
CBT Total below Cut Score $X' = 1.15385 (X)$
Form B2
CBT Total at or above Cut Score $X' = 0.43732 (X) + 43.80466$
CBT Total below Cut Score $X' = 1.15385 (X)$
Form C1
CBT Total at or above Cut Score $X' = 0.44118 (X) + 43.57353$
CBT Total below Cut Score $X' = 1.15385 (X)$
Form D1
CBT Total at or above Cut Score $X' = 0.43541 (X) + 43.91872$
CBT Total below Cut Score $X' = 1.15385 (X)$
Note: X' = scaled score; X = obtained CBT score.

Appendix AD. Summary of CBT Scale Score Conversion for Candidates

Form B1			
CBT Score		Scale Score	
1.0		1	
59.8		69	
59.9		70	
129.3		100	
Summary Statistics		Summary Statistics (passers)	
Mean	100.43	Mean	88.06
SD	15.94	SD	5.81
SEM	5.5	SEM	2.0
SED	7.8	SED	2.8
Form B2			
CBT Score		Scale Score	
1.0		1	
59.8		69	
59.9		70	
128.5		100	
Summary Statistics		Summary Statistics (passers)	
Mean	100.05	Mean	88.08
SD	15.70	SD	5.85
SEM	5.4	SEM	2.0
SED	7.7	SED	2.9
Form C1			
CBT Score		Scale Score	
1.0		1	
59.8		69	
59.9		70	
127.9		100	
Summary Statistics		Summary Statistics (passers)	
Mean	99.99	Mean	88.24
SD	15.77	SD	5.90
SEM	5.5	SEM	2.0
SED	7.7	SED	2.9
Form D1			
CBT Score		Scale Score	
1.0		1	
59.8		69	
59.9		70	
128.8		100	
Summary Statistics		Summary Statistics (passers)	
Mean	99.35	Mean	87.79
SD	16.30	SD	5.87
SEM	5.6	SEM	2.0

SED	8.0	SED	2.9
Note. Statistics based on Candidate population, N= 42,231 Alpha = .88 used to compute SED and SEM.			

Appendix AE. Item Analysis of Candidate Response Data

Statistical Properties	Cognitive				Non-cognitive
	Form B1	Form B2	Form C1	Form D1	
No. Items	57	57	57	57	65
Item Difficulty					
Mean	0.84	0.85	0.88	0.86	0.85
SD	0.14	0.13	0.10	0.14	0.13
Minimum	0.49	0.47	0.58	0.41	0.47
Maximum	0.99	0.99	0.99	1.00	1.00
Item-total correlation					
Mean	0.35	0.37	0.37	0.37	0.41
SD	0.09	0.08	0.08	0.07	0.14
Minimum	0.08	0.08	0.24	0.25	0.03
Maximum	0.62	0.63	0.62	0.58	0.67

Note: Item statistics calculated after TVB item scoring modifications; Item difficulties expressed as proportion attained of available points per item. Based on 41,696 candidates.

Appendix AF. Equivalence of Alternate CBT Form Cognitive Portions

Form	No. Items	Max possible score	N	Mean	SD	Alpha	Correlation with Form A*
Form B1							
Total Cognitive T Score – 70/30	57	61.5	11483	50.0	10.0	0.83	0.79
Video Lesson (lecture, safety, Q&A)	26	36	11483	32.4	4.2	0.73	0.72
Operations Manual	31	32	11478	24.5	4.8	0.81	0.79
Form B2							
Total Cognitive T Score – 70/30	57	60.7	7629	50.0	10.0	0.86	0.80
Video Lesson (lecture, safety, Q&A)	26	36	7628	32.3	4.2	0.77	0.73
Operations Manual	31	32	7625	26.0	4.4	0.81	0.78
Form C1							
Total Cognitive T Score – 70/30	57	60.1	12781	50.0	10.0	0.84	0.80
Video Lesson (lecture, safety, Q&A)	26	36	12781	32.3	4.1	0.74	0.75
Operations Manual	31	32	12778	27.4	4.4	0.84	0.76
Form D1							
Total Cognitive T Score – 70/30	57	61	10338	50.0	10.0	0.82	0.81
Video Lesson (lecture, safety, Q&A)	26	36	10338	32.3	3.9	0.70	0.74
Operations Manual	31	32	10329	25.9	4.9	0.85	0.85

Note: Test statistics (N, mean, SD, alpha) are based on candidates tested. Scores reflect TVB scoring adjustments. Differences in N within form are due to missing data where candidates skipped a section of the test.

*Correlations with Form A are based on equivalency study sample of out-of-state temporary workers and job seekers (N = 233 – 239 per form).

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